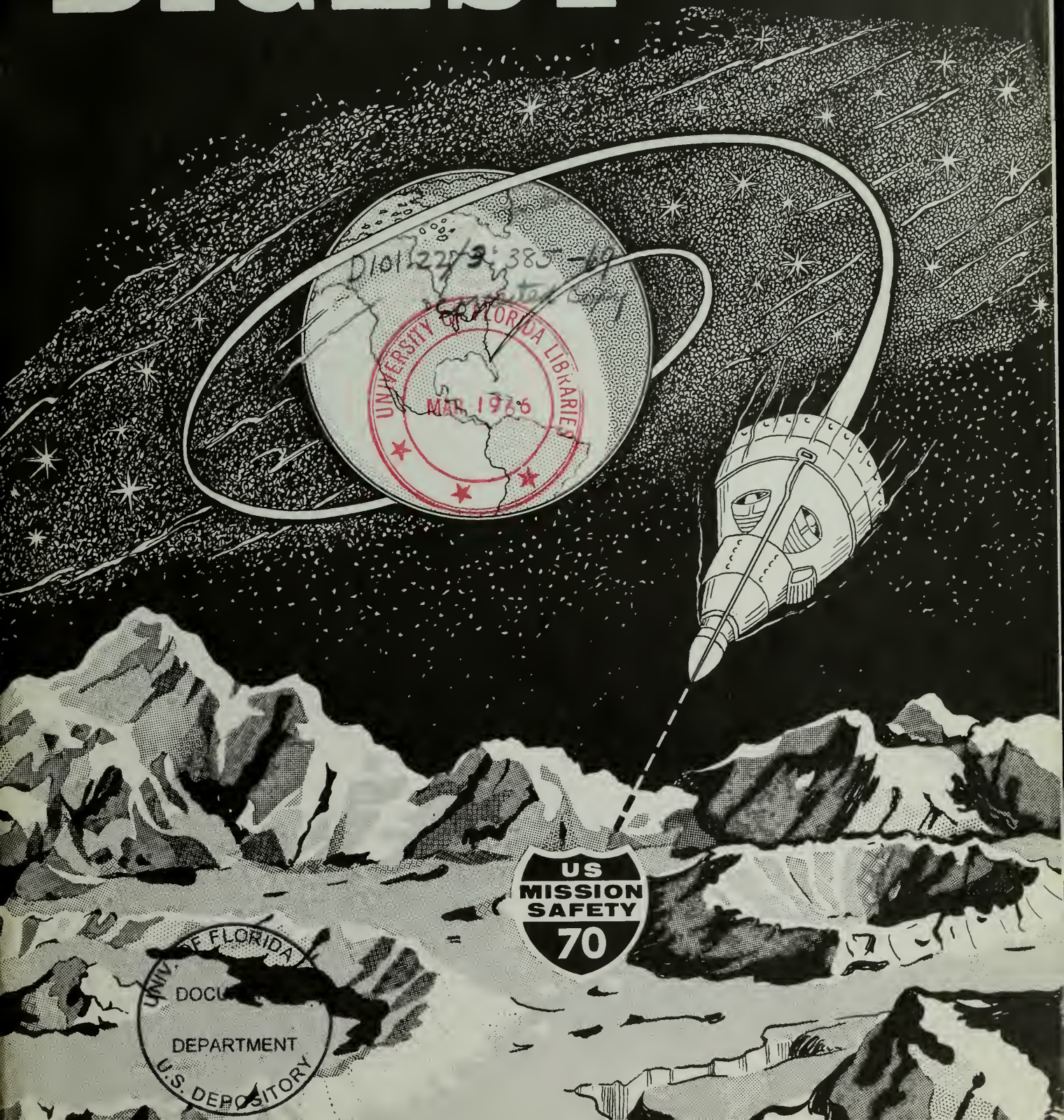
SAFETY DIGEST

AMC PAMPHLET
AMCP 385-69

JAN 1966



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GENERAL BESSON PRESENTS AMC FY 1965 SAFETY AWARDS

At a ceremony held at Aberdeen Proving Ground, General Besson presented AMC FY 1965 safety awards to the major subordinate commands and the AMC Board.

General Besson is shown presenting General Anderson, U. S. Army Weapons Command, the AMC Award of Honor for the best command safety program.

General Zierdt, U. S. Army Missile Command, is shown accepting the AMC Award of Merit.

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General Lapsley, U. S. Army Mobility Command is shown accepting the AMC Award of Merit.

GENERAL BESSON PRESENTS AMC FY 1965 SAFETY AWARDS

Mr. Shada, Executive Assistant to Commanding General, U. S. Army Supply and Maintenance Command is shown accepting the AMC Commendation for Safety.

General Hansen, U. S. Army Munitions Command is shown accepting the AMC Commendation for Safety.

Colonel Ries, Deputy President, AMC Board is shown accepting the AMC Commendation for Safety.

HEADQUARTERS
UNITED STATES ARMY MATERIEL COMMAND
WASHINGTON, D.C. 20315

AMC PAMPHLET
Number -- 385-69 **January 1966**

The Safety Digest is an AMC Pamphlet prepared by the Safety Division, U. S. Army Materiel Command. Its purpose is to disseminate information which can materially influence and improve safety programs at all Command establishments.

Articles are included to supplement technical knowledge as well as practical knowledge gained through experience. They provide a basis for the further refinement of safety measures already incorporated in operating procedures and process layout. To achieve maximum effectiveness, the Safety Digest should be given widespread circulation at each AMC establishment.

Articles appearing in the Safety Digest are unclassified and are not copyrighted. They may be reproduced as desired in order to bring pertinent accident prevention information to the attention of all employees. The Army Materiel Command Safety Digest should be given a credit line when articles are extracted.

Unclassified materiel believed to be of interest or benefit to other establishments is welcome for publication in the Safety Digest. Please send articles for review to: U. S. Army Materiel Command Field Safety Agency, Charlestown, Indiana. If possible, include pictures, charts, drawings, and illustrations that clarify and heighten interest in your presentation.

(AMCAD-S)

FOR THE COMMANDER:

SELWYN D. SMITH, JR.
Major General, USA
Chief of Staff

OFFICIAL:

STANLEY J. SAWICKI
Colonel, GS
Chief, Administrative Office

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THE ARMY RECOGNIZES AMC FY 1965 SAFETY PROGRAM WITH AN ARMY AWARD OF MERIT

In the letter shown below, the U.S. Army Deputy Chief of Staff for Personnel, Lt. General Woolnough, informed General Besson that the Army Materiel Command has won the Army Award of Merit for Safety. Each of you are congratulated for your contributions to AMC safety.

24 November 1965

Dear Frank:

It is a pleasure to inform you that your command has achieved the Department of the Army Safety Award of Merit for FY 65, for your outstanding contributions to the protection of personnel and the preservation of materiel and facilities.

A plaque commemorating the award is being engraved for presentation at the earliest suitable occasion.

Congratulations to you and your command.

Sincerely,

J. K. WOOLNOUGH
Lieutenant General, GS
Deputy Chief of Staff
for Personnel

General Frank S. Besson, Jr.
Commanding General
United States Army Materiel Command
Washington, D. C. 20315

AMC WINS NATIONAL SAFETY COUNCIL AWARD OF HONOR FOR THE THIRD CONSECUTIVE YEAR

The National Safety Council has informed this Headquarters that the U.S. Army Materiel Command has earned the National Safety Council Award of Honor for its FY 1965 Safety Program. This is the third consecutive year AMC has been so honored.

In support of this accomplishment, the following commands, installations, and activities have been approved for the listed NSC safety awards. AMC personnel are congratulated for their contributions and support of the AMC Safety Program.

● Award of Honor

U.S. Army Weapons Command
U.S. Army Ballistics Research Laboratories
Umatilla Army Depot
Lake City Army Ammunition Plant
Charlotte Army Missile Plant
U.S. Army Aviation Materiel Laboratories
Erie Proving Ground
U.S. Army Materiel Command Installations & Services Agency
Deseret Test Center
Joint Military Packaging Training Center
Lima Army Modification Center
U.S. Army Management Engineering Training Agency

● Award of Merit

U.S. Army Coating and Chemical Laboratory
Savanna Army Depot
Springfield Armory
U.S. Army Production Equipment Agency
New Cumberland Army Depot
U.S. Army Missile Command
Erie Army Depot
U.S. Army Mobility Command
Cincinnati Procurement District, U.S. Army
Tobyhanna Army Depot
Red River Army Depot
Anniston Army Depot
Sierra Army Depot
Louisiana Army Ammunition Plant
U.S. Army Engineer R&D Laboratories
Indiana Army Ammunition Plant

● Award of Merit (cont.)

Directorate of Materiel Readiness, U.S. Army Electronics Command
Milan Army Ammunition Plant
U.S. Army Airborne Electronics Special Warfare Board
Newport Army Ammunition Plant
Michigan Army Missile Plant
Missile Support Command
Watervliet Arsenal
Radford Army Ammunition Plant
U.S. Army Human Engineering Laboratories
Edgewood Arsenal
U.S. Army Supply and Maintenance Command
U.S. Army Munitions Command

CHARLOTTE AMP presented AMC Award of Honor

Major General John G. Zierdt, Commanding General of the Army Missile Command, is shown presenting the AMC Award of Honor for Safety to A. D. Jamtaas, Manager of the Charlotte Army Missile Plant. G. C. Neff, safety director for the Douglas operated Charlotte Plant, is at the right in the picture.

PLANNED WAREHOUSING IS SAFER WAREHOUSING

A. E. Burke
Safety Inspector, Aberdeen Proving Ground

Have you been, or are you now confronted with the problem of storing tools and materials of several different trades? If so, you know that without proper controls confusion develops and eventually you may have a disorderly and potentially unsafe supply situation.

This can be overcome with the foresight demonstrated by the Plumbing and Metalworking Section at Aberdeen Proving Ground. Tools and materials for this organization were originally stored in 3 locations. When available, a mechanic operated the supply and tool crib. Control of materials left a lot to be desired.

The foreman, knowing the situation could be better, resolved to plan his warehousing and to consolidate tools and materials for plumbing, sheet metal, and oil burner repair in one building. The building into which he intended to move had been used for cutting and storing pipe. In order to effect his plan he outlined an approach to assure the following:

1. A minimum effective stock level.
2. Association of related materials.
3. Availability and accessibility of materials.
4. Security controls.
5. Safety controls.

To insure a minimum effective stock level, a determination of what to stock was made by inventory. Between 300 and 400 items that were obsolete or had extremely limited usage were eliminated.

To associate related materials, an alphabetic index was set up before the move and a sketch of the storage bins was made to show related storage.

Previously some materials could not be stocked due to limited space in the old storage area. These materials are now stocked as the result of the elimination of obsolete and

slow moving items and by the acquisition of the new storage area. Accessibility was gained by storage of heavy cumbersome materials and equipment in the proximity of double doors to facilitate loading and unloading.

Security and supply economy were achieved by consolidating the supply activities so that full-time and experienced warehouse personnel could be used. Savings were realized by reducing the time formerly spent by supervisors in procurement activities. Materials are now readily available and controlled.

Safety was planned into the operation in the following manner:

1. The building interior was painted a light color to improve lighting.

2. The lighting was further improved by the substitution of fluorescent lights for old and inadequate incandescent fixtures. (See Photo #1.)

3. A ladder rack of unusual design, shown in Photo #2, was fabricated to ease storage and facilitate spot and scheduled inspections. All bins were numbered for storing correspondingly numbered ladders.

4. All ladders are safety inspected at the time of issue and are safety certified on the employee's tool issue slip.

5. Before being issued for use, all portable electrical hand tools are checked for grounding and short circuits. This is accomplished by employing an electrical tester that was designed at Aberdeen Proving Ground specifically for this purpose. (See Photo #3.)

6. All hand tools are inspected and maintained on a continuing basis. Photo #4 shows section of counter. Personnel are protected from injury by transparent axhead guards.

7. Aisles in the warehouse are wide, well lighted and uncluttered.

8. Portable non-skid safety steps are provided to reach high storage bins.

Planned warehousing has paid off in increased safety and efficiency. Planning and safety awareness in this Aberdeen Proving Ground organization of approximately 50 men has resulted in the accumulation of one and one-half million civilian manhours without a lost-time accident since February 1948.

Photo #1 - Lighting was improved by installation of fluorescent lights.

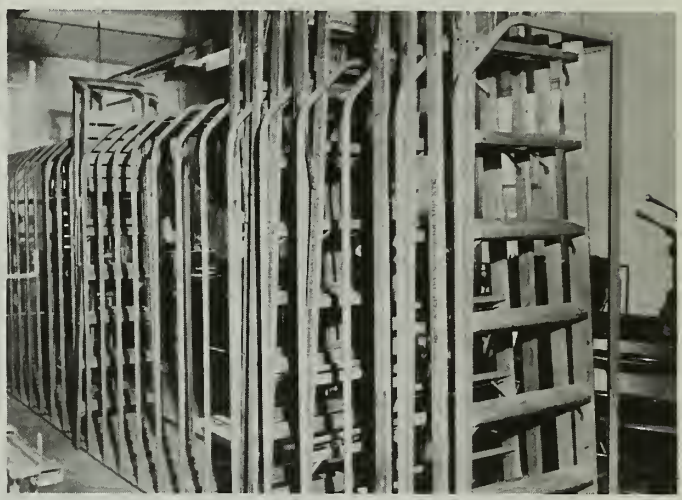


Photo #2 - A specially designed ladder rack facilitates the storage and safety inspection of ladders. The rack was fabricated of thin wall tubing, 1" thick.

Photo #3 - Warehouseman provides a safety test before an electrical drill is issued.

Photo #4 - Transparent axhead guards constructed with wooden frames and plexiglass protect both the axes and the personnel.

PROFESSIONALISM

The following was extracted from an award-winning article written in a recent issue of the U.S. Army Aviation Digest.

"Personal interest on the part of the commander is probably the greatest catalyst in a unit. Take the company commander with you and systematically spot check each type of equipment in each company, platoon, and section. The many preventive maintenance checklists available will make it easy for you to make these spot checks.

"Another useful technique is to require periodic reports on the status of all equipment which is not fully operational: daily reports on the aircraft; weekly reports on vehicles and radios; monthly reports on items such as weapons, gas masks, and typewriters which don't take so much maintenance effort. By keeping track of what equipment is down, why it is down, and what's being done about it, you will find the lists getting shorter each week.

"Your active and personal interest in the condition of your unit's equipment is almost guaranteed to bring about immediate and noticeable improvement.

"The time you spend on an active accident prevention program will pay dividends you didn't believe possible. Your program should stress healthy attitudes, healthy bodies, and accident prevention surveys.

"The basic philosophy of an accident prevention program is that in the final analysis accidents are caused by human failure somewhere along the line. Potential failures can be detected and corrected before they happen if each individual in your battalion is accident prevention conscious and anxious to correct hazardous situations.

"You can instill this attitude in several ways. The simplest approach is to put out the directive 'Do not have accidents.' This, like hitting the mule over the head with a baseball bat to get his attention, is bound to impress people with the importance of safety.

"A more reasoned approach is to establish a high standard of excellence in all aspects of maintenance and flying. Cultivate in your pilots a healthy and positive attitude toward flying. Have each pilot think of his flight in its

various phases: briefing, flight plan (route, altitude, radio aides, checkpoints, landing areas), weather check, walk-around, cockpit check, preflight check of all radios and systems, inflight procedures, parking, shutdown, and tiedown procedures, flight plan closure, and final critique.

"He should perform each phase so thoroughly and meticulously that he is subconsciously sure that he understands all aspects of the flight, will handle each aspect competently, and will use the correct procedures in case of emergency. Standardization, attention to detail, planning, and execution according to checklists are marks of excellence.

"A third approach is to keep the subject constantly before your aviators and mechanics. Use safety posters and bulletin boards with fresh and interesting displays. Distribute material such as Flight Safety Foundation bulletins and USABAAR's Weekly Summary of aircraft accidents and incidents. Each morning at the daily operational and weather briefing, have someone present a cogent word on safety. And make sure your monthly safety meetings are occasions to which all your aviators look forward.

"Remember that anxiety, slipshod or careless procedures, half-baked plans, lack of knowledge or disregard of regulations, and action based on emotion rather than judgment are all evidence of improper attitudes which your safety program can correct.

"Physical fitness sharpens mental acumen and gives the high muscle tone which is good insurance against fatigue and weariness brought on by long, hard flying. If a tight schedule of operations and maintenance activities keeps you from having a first-rate athletic program during duty hours, then encourage your people to undertake individual fitness programs on their own time.

"The beauty of these programs is that each person, depending on his own interests and abilities and using whatever time and facilities are available, can choose his own sport and his own set of daily calisthenics. Swimming, golf, tennis, bowling, and hunting are all good individual sports, while either the Canadian Air Force 5 BX program or the Army's Physical Fitness Program for Staff and Specialist Personnel (DA Pamphlet 21-1) is good for daily periods of strenuous exercise at home.

Continue on page 10

PREVENT HERNIA-TYPE INJURIES

An Army employee working on an ammunition demilitarization conveyor line was removing fiber containers from 75mm shells. One container was hard to disengage, and he gave it a sharp jerk to free it from the shell. He felt and reported a sharp pain in his left side, and he was sent to the dispensary for treatment. A month later he entered a hospital for surgical repair of an inguinal hernia.

This summary of a simple accident does not reveal one important thing. That is the distressing frequency of occurrence of simple accidents that cause Army Materiel Command personnel to be disabled by hernias.

In FY 1965 there was an 88 per cent increase of hernias over the number suffered in FY 1964. While the number of cases (32) may appear to be small, it represents much preventable human suffering, hospitalization, lost time, and expense.

Within AMC the increase in hernias was confined to male Army civilian employees. The number reported for this personnel category rose from 11 in FY 1964 to 30 in FY 1965. During the same period, cases reported for other (contractor) personnel decreased by two-thirds, from 6 to 2 such injuries.

The average age of the individuals who suffered hernias declined somewhat, from 48 in the first to 45.6 in the second year.

Lifting was the most frequent activity at the time of injury.

One installation reported seven hernias in one year.

Review of the reports on which these accidents were described reveals that most of these injuries could have been prevented. The supervisor should have done his job better, and the worker should have exercised more thought about the way he did his work.

Here are several positive actions that may be taken by any installation to reduce the occurrence of hernia-type accidents:

1. The promotional part of the safety program should be adjusted to stress action by the individual to prevent hernias. The importance of the subject should be emphasized, and information on it should reach all employees at regular intervals.

2. The supervisor should make certain that unnecessary and hazardous lifting will not be done. For the sake of efficiency as well as for the protection of the worker, materials handling should be accomplished by machines whenever this is practicable.

3. The supervisor should make certain that his personnel are assigned to tasks that are within the range of their individual physical capabilities.

4. The supervisor should make certain that his personnel are trained in safe lifting techniques. Instructions should be issued and enforced that the work will not be done in positions that place undue strain on any part of the body. Help will be sought by the worker when he encounters a need to lift any heavy or unwieldy load that must be moved without the aid of a machine.

5. The employee should be required to report all injuries and suspected injuries promptly.

O O O

Continued from page 8

"Let your people know that a healthy body needs not only exercise, but also good sleep, a good breakfast, and a balanced diet.

"Each year USABAAR puts out an excellent pamphlet on accident prevention surveys. You will see that this pamphlet is actually a checklist which goes to the very core of your troop leading and management procedures. It cuts pretty well across the entire gamut of your responsibilities. Have your safety officer and other primary staff officers conduct periodic surveys, using the sections of the pamphlet which cover their responsibilities. Check to see that deficiencies found during the surveys are corrected. If a checklist shows that your battalion has no deficiencies, its aircraft accident record is doubtlessly clear, and you can be sure that you have a first-class outfit."

FIRE DEPARTMENT INGENUITY PAYS OFF

Chris D. Kneipp, Fire Chief
Louisiana Army Ammunition Plant

The Louisiana Army Ammunition Plant Fire Department, contractor-operated by Remington Office Equipment Division, Sperry Rand Corporation, has the firm belief that the key to a successful fire prevention program is that the Fire Department show an enthusiastic interest in fire prevention and protection. This interest must be conveyed to all personnel through training and education.

The LAAP Fire Department also maintains that fire prevention is a year-round job. It puts forth every effort to educate all personnel in fire prevention throughout the year. In carrying out this program, the Fire Chief, and members of the department have obtained various obsolete commercial signs and salvage materials at no cost to the Government and have adapted these to use as visual fire prevention training aids. An example of one such aid is the complete portable sprinkler system shown in Photo 1.

This system was rebuilt by the Fire Chief and members of the department from salvage materials obtained by the Fire Chief and Army Safety Director A. H. Gilbert, LAAP Fire Marshal. This system was rebuilt and assembled into a complete operating portable sprinkler system. It is used for the training of firefighters, auxilliary firefighters, other plant personnel and personnel from fire departments in surrounding communities. It shows what happens when a sprinkler system is activated, how it functions and what the results are. A Plexiglas side was installed so that the operation can be viewed as the system is activated.

The Fire Department also puts forth every effort to maintain up-to-date fire fighting apparatus. It also makes modifications if applicable to increase the fire fighting potential of the apparatus. One such modification is shown in Photo 2.

This 1952 FWD 1,000-gallon tank truck is used for combating woods and grass fires. It was modified by installing fine sprinkler heads on the front of the truck to increase grass fire fighting potential. These heads will produce an approximately 10-foot wide blanket of water that extends 25 feet in front of the truck. It is very effective in extinguishing open field grass fires.

This fire truck modification was accomplished by the Fire Chief and members of the fire department. They installed a 1-inch piece of pipe, bent to the curvature of the front bumper. Street ells are used to secure sprinkler heads, making it possible to preset heads at any angle. A short length of 1 1/2-inch heavy duty rubber hose has a female coupling on each end. One end is connected to the discharge connection on the side of the tanks and the other end is connected to the sprinkler baffle.

Any type of nozzles may be used. LAAP use 1" x 1/4" Spraco Fog Sprinkler heads with inside of nozzles removed for better coverage. Also a slot was cut crosswise on the two end nozzles to get a fan-shaped spray for better coverage. The water pump is of the power take-off design. The type of sprinkler heads that are used are designed to deliver approximately 13 gallons of water a minute. With the five heads there is approximately 15 minutes of water supply from the 1,000-gallon tanker. By using a different type nozzle, the water applied to the fire might be increased.

In addition to this spray bar in front, the tanker is equipped with booster hose, garden hose, back packs and other equipment used in combating grass and woods fires.

Pictures of these and other visual aids used in the plant Fire Prevention Program have been compiled and inserted as a section in the Louisiana Army Ammunition Plant Fire Prevention and Protection Program.

By no means the least requirement for a successful program is to have the backing of management in your program. This the LAAP Fire Department has.

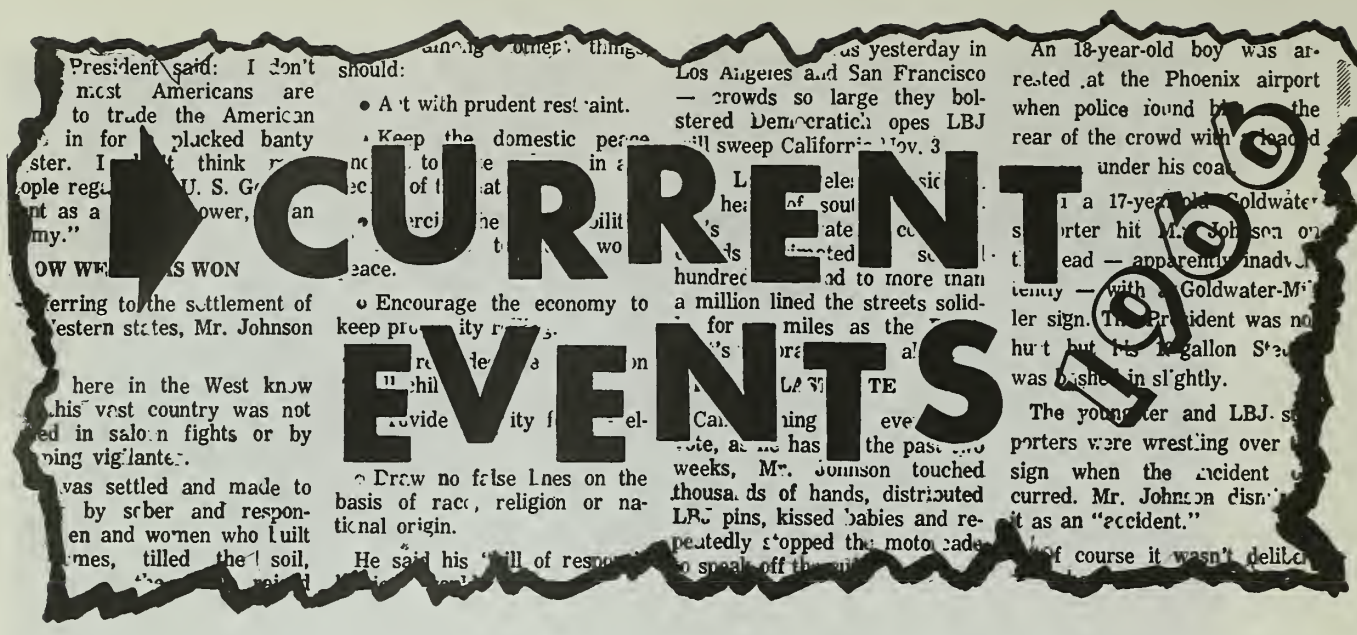
While LAAP feels they have a successful program, we do not rest on the laurels of past performances. This is a continuing program year-round, every year, and every effort is made for further improvement.

PHOTO 1

Louisiana Army Ammunition Plant uses this operating portable sprinkler system in demonstrations and training sessions for fire fighting personnel.

PHOTO 2

Modifications made by the Louisiana Army Ammunition Plant fire department on a 1,000-gallon tank truck have increased the installation's capability for fighting grass fires.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CURRENT EVENTS

LONG BAR PINCHES FINGER

A machinist was fitting a gun drill to a 12-foot long 1 1/4-inch diameter boring bar that weighed 38 pounds. The end to which the drill was to be secured was held in a vise mounted on a workbench. The other end of the bar rested on the bench about 2 inches from its edge.

The workman secured the drill to the end of the bar, loosened the jaws of the vise and lowered the bar into it. With his right hand near the vise, he then started to lift the bar. As he lifted, the far end of the bar slipped off the bench. The friction of the falling bar against the side of the bench produced a scissor-like action that raised the end near the vise. The machinist's little finger was pinched against the vise and was severely lacerated and fractured.

To prevent similar accidents the installation distributed to its shop supervisors information that described the accident and instructed them on the following points:

a. Work materials being used must be placed in a safe, secure manner.

b. Long items such as bar stock and machine parts should be picked up at or near the center of gravity.

c. Pinch points were a common source of severe injuries and must be guarded against.

IMPROMPTU BACKING CAUSES ACCIDENTS

The driver was on his way to the motor pool to pick up another worker. As he turned down a street he met a sedan and saw that the man he was seeking was riding in it. He flashed his lights as a signal for the other driver to pull up, and the sedan pulled to a stop after the two vehicles had passed.

After the driver looked into his left side mirror and saw nothing in his way, he began to back toward the sedan. He backed his vehicle into a parked Army pickup truck that was so close behind and so far to the right that it did not appear in his lift-side mirror. The damage was estimated to be $114.50.

The driver was reprimanded for his careless driving and was given fresh instructions on safe driving requirements.

UNPLANNED MOTION COSTS FINGER

An employee was defuzing 2.75-inch rocket warheads. The work involved the use of an air-operated, foot-controlled vise and a hand-operated defuzing wrench. He performed the operation with his back to the conveyor which brought the fuzes to his work station.

After he had placed one warhead in the vise, he noticed another warhead moving by him on the conveyor. Without relaxing his grip on the warhead in the vise he reached back to take the other from the conveyor. As he did this, his foot activated the vise control and the vise closed. It caught and amputated the distal phalanx of the first finger on his right hand.

Employees of the installation were given instructions on the safe methods of operation of air-operated machines. A check was made of the defuzing operation to make certain that operators worked facing the normal flow of work.

AIRCRAFT DOWNS TWENTIETH CENTURY ATLAS

A UH-1B helicopter was being moved from a building to a run-up area at an Army installation. With its ground handling wheels in place and lowered, the aircraft was almost balanced. It appeared that one man at the tail skid could keep its level steady.

As the helicopter was towed toward its destination, the worker assigned to control its balance walked at the rear with the skid on his shoulder. The route led across a low place between the roadway and the run-up area. When the aircraft's ground handling wheels started down the incline, the weight of the load caused it to move faster than the tug that was towing it. The downgrade acceleration had the effect of raising the front of the aircraft while the tail was lowered.

The worker with the tail skid on his shoulder could not support the suddenly increased load. He was knocked to the ground and the descending skid bounced against him. The tug continued to move forward. This took up the slack between it and the aircraft and moved the tail skid away from the man on the ground.

Back injuries in the lumbar sacral area kept the man away from work for several days.

To prevent similar accidents the installation initiated the following actions:

1. Personnel were instructed to balance this type of aircraft when towing it in the future by riding inside rather than by placing the tail skid on their shoulders.

2. Whenever it should be necessary to balance the aircraft from the outside, workers were instructed to support the skid with their hands. This should permit them to release it and step aside to escape injury.

3. Study was started on a suggestion for construction of a wheeled dolly to support the tail skid while the aircraft was being towed.

WRONG TORCH USE LEADS TO ACCIDENT

A length of 3-inch diameter pipe was being cut into 2 pieces for use in the repair and assembly of a crane. Instead of using an acetylene cutting torch, which should have prevented a slag accumulation, an Army employee attempted to make the cut with a welding torch.

When he completed his cut around the circumference of the pipe, the worker found that a small amount of slag held the 2 sections together. To separate the sections he lifted and dropped one end. The slag broke when the falling section struck and bounced off the other section.

A second employee stepped forward while the first worker was separating the 2 pieces of pipe. The section that bounced when it broke free struck him on the upper part of the left leg. The resulting abrasion, injury to soft tissue and swelling, caused him to miss 3 days work.

The following actions were taken to prevent similar accidents:

1. Workers were given specific instructions on the use of the correct tools in cutting operations. Cutting torches were to be used for cutting and welding torches for welding.

2. Employees were instructed to stay clear of working areas unless they were directly and physically involved in performing the work.

NEEDED: MISSION SAFETY- 70 IDEAS

Achievement of the goals established for the President's campaign for accident reduction -- Mission Safety-70 -- involves more than intensified local efforts. It requires the greatest possible amount of cooperation and sharing of ideas by AMC installations and activities.

Because of the great variety of missions performed by the AMC installations and activities, general methods alone will not attain the Mission Safety-70 goal. Each installation and activity must have a program specifically tailored to its own needs.

While these local programs are being implemented many installations will adopt original ideas that will help them prevent accidents. Often these ideas or variations suggested by them might be used at other installations. Unfortunately, information on a useful new idea or an ingenious application of an old idea may never reach other safety personnel that might use it.

The Safety Digest offers you an opportunity to share with other AMC installations the ideas and methods that have helped you prevent accidents. You are encouraged to send articles on such subjects for review to: U.S. Army Materiel Command Field Safety Agency, Charlestown, Indiana. For these to be useful it is not necessary for you to determine the extent to which your idea will be applicable elsewhere. The people who read about your idea will often find a way to use it or to fit it to their needs. All they need is an understanding of what you have done. Pictures, charts, drawings, or illustrations, as applicable, will help make clear what you have done. You are encouraged to include these.

Your response to this offer to share your accident prevention ideas and methods is an opportunity to show your support of the President's Mission Safety-70 campaign.

SOP TO SUCCESS

Can you imagine what would happen if you asked each of 12 men to bake a cake without the aid of a recipe. The results could be chaotic. Some might not even achieve an edible product. Each "cake" would vary in texture, quality, flavor, size, and shape. No two would be alike.

If we were operating a bakery, such a condition could not be tolerated because of the waste, the lack of uniformity, the absence of any assurance in quality and the inability to meet customer demand. We would go out of business fast.

This holds true for any business where a product is involved. Here at Radford Army Ammunition Plant where the product is complex, the need for a "recipe" of operation is all the more important. We have such "recipies" for every operation performed at this plant, they are called SOPs (standing operating procedures), and instruct on the "what," "why," "when," "where," and "how" the jobs should be performed Also included are specific safety rules and precautions.

Much time and effort have gone into formulating these SOP's. They are constantly being upgraded based on our experiences at Radford and other Hercules plants as well as that of other plants operating under the Army Materiel Command. These procedures are written in step-by-step order, not only for clarity and simplicity but because EACH STEP HAS A DEFINITE ORDER AND PURPOSE. Many a step has been added to avoid the possibility of an incident which had occurred at another installation.

Don't take short-cuts -- FOLLOW THE SOP for your job AS WRITTEN. This will assure you of the greatest safety in performing the job, the best assurance of quality work with a minimum of waste in both time and material. Following the SOP will also help insure Zero Defects in our operation and a continuation of our outstanding safety record.

- Radford Army Ammunition Plant, Powder Press

(Editor's Note: The outstanding safety record referred to was 10 million manhours without a disabling injury. At the time this article appeared in its plant newspaper Radford Army Ammunition Plant was adding additional injury-free man-hours to this record.)

PICATINNY SAFETY PERSONNEL PLAN CIVILIAN DEFENSE

Safety Division, Picatinny Arsenal

Some installations have given the responsibility for civil defense to their safety divisions because the saving of human lives is their primary concern. Such is the case at Picatinny Arsenal. This summary of its activities may be of value to other installation safety divisions that are assigned civil defense responsibilities.

In the event of a nuclear-type attack, the Arsenal anticipates that it will receive radioactive fallout. Its plans are based upon providing maximum personnel protection with ample shelters to accommodate employees, visitors, and contractor workers. While no assurance exists that a warning will be possible, all potential occupants are assigned to shelters within a 20-minute maximum walking time. When the "Red" alert is sounded, everyone within the confines of the Arsenal can reach a shelter within 20 minutes without running.

Since this required a minimum of 20 personnel shelters, all of our buildings were examined by a coordinated Engineer-Civil Defense survey party. Structures selected met the criteria prescribed by the National Shelter Program. These were marked with the official shelter signs. Instruction placards were placed in every Arsenal building telling where to go when the alert warning is sounded. The Building Fire Marshal was given the additional duty of Warden to shepherd his people to the designated shelter.

Our next step was that of requisitioning, receiving and distributing federally supplied items of shelter supplies and equipment in each facility. This created another problem because most of our buildings are operational, space is at a premium, and someone must be responsible for the security and maintenance of the stocks. Accordingly, two supervisors for each shelter were selected and appointed Shelter Managers (with their consent). They found the space required, stowed away the items and maintained them. Thus step by step we determined our requirements, selected our shelters, surveyed them, stocked them, and assigned responsible personnel to maintain them.

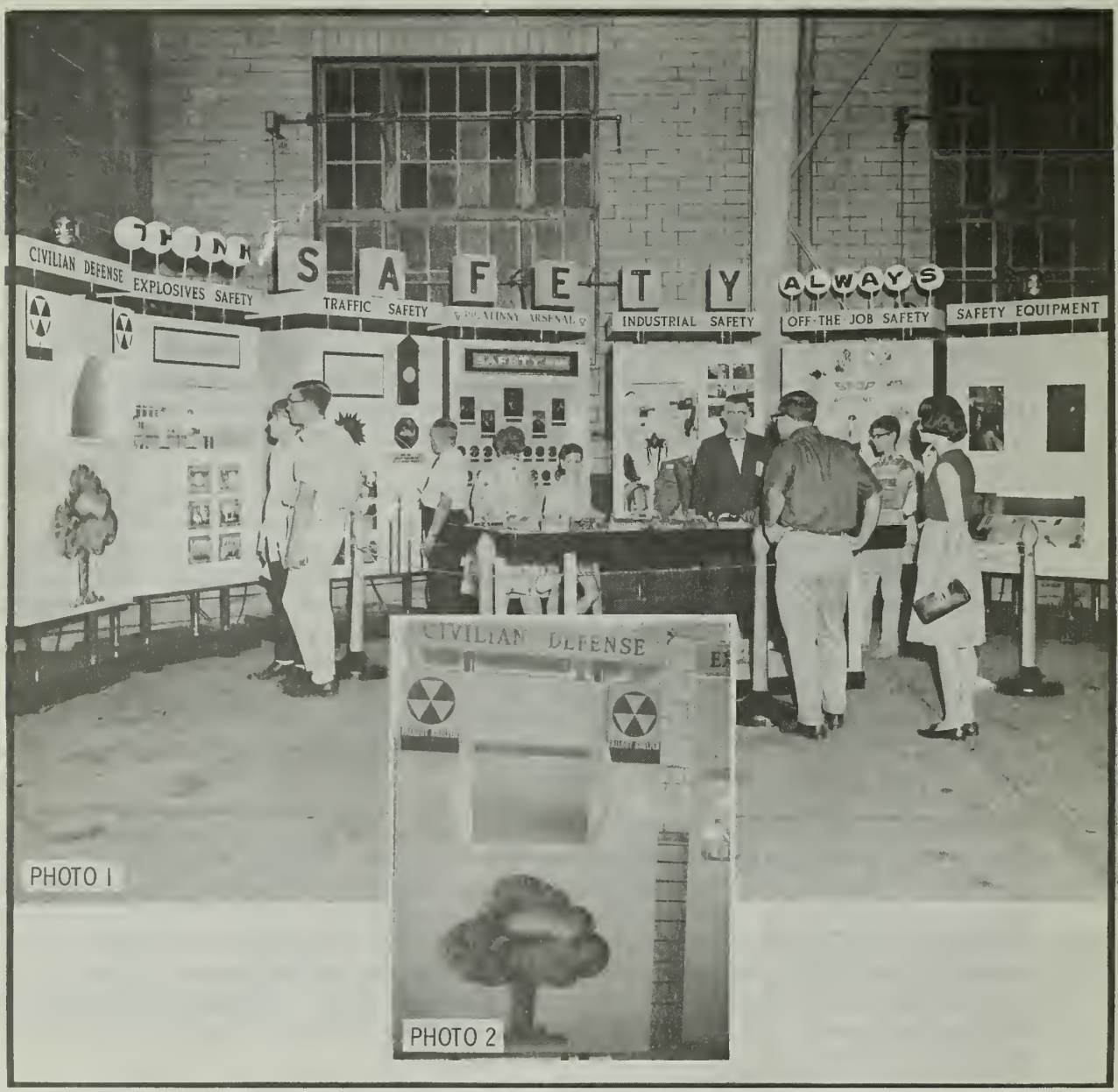
All this took time. While it was being accomplished, three safety officers were sent to Office of Civil Defense schools for training in civil defense operations, radiological monitoring and shelter management. Using the three as a nucleus, a shelter control center with 19 satellites was established and communications by telephone and short wave radio linked them together with the appointed shelter managers. Supplemental supplies and equipment not furnished by the government began to trickle in. While austerity is still the prevailing condition in-shelter, materials for improvisation of tables, chairs, and bunks are being stored, tool kits are being made up and boxed for storage, and ventilation and illumination are being improved. Each shelter manager vies with the others in creating better living standards.

In May 1965 the shelter managers attended a course of instruction in shelter management. They received 8 hours of classroom lectures followed by 23 hours of actual shelter occupation and operations. Using the Office of Civil Defense techniques, realism was introduced into the program when the shelterees had to extinguish a simulated fire, care for injured casualties, decontaminate and treat victims of radiation sickness, and react to other situations. The actual participation in the shelter exercise so stimulated the employees that they are now seeking means to provide for additional comforts they lacked during the exercise.

We are now deep in the throes of organizing shelter operating staffs to assist the manager in his operational duties. These staffs, echeloned in depth to counter absentees, meet periodically in-shelter under leadership of their manager. They are trained in their duties and they assist in the formulation of programs or procedures for shelter occupancy. With many busy minds intent on making their shelter habitable, we are assured that if the alert sounds Picatinny will not be found wanting.

All these trained employees live in surrounding communities and can be of use to the local Civil Defense Unit. Other elements of the Civil Defense organization such as chemical, biological, and radiological survey parties, explosive ordnance disposal and explosive ordnance reconnaissance teams, engineer rescue units and first aid teams are based in selected shelters available for dispatching in the event of a disaster.

The average man in the shops throughout Picatinny Arsenal now has the assurance that his safety is provided for in the event of a nuclear attack.



Picatinny Arsenal has a portable safety exhibit for use on the installation and at off-post events. Photo 1 shows the Arsenal's exhibit as it appeared at the Morristown, New Jersey, Armory for the 23-26 September 1965 Morris County Health Exhibit.

The civil defense unit appears at the extreme left in Photo 1, and it is shown alone in Photo 2. A continuous film, shown by rear projection, is the main feature of this part of the exhibit.

THE HAZARDS OF AMATEUR ROCKETRY

A young boy, an amateur rocket enthusiast, was using a mortar and pestle to mix a homemade rocket propellant, when the mixture suddenly exploded. The heavy mortar was shattered and the fragments thrown all around the room.

The incoherent boy, in a state of shock, was taken to the hospital with multiple lacerations on his face and hands that required extensive surgery. He was also badly burned on his face, hands, and chest, and there was the possibility of eye damage.

This accident emphasizes the fact that children can buy dangerous chemicals without knowing the hazards involved. It is said that more parental supervision is needed to prevent chemical accidents. However, it is questionable that most parents know enough about the properties of chemicals to prevent them from being used in an unsafe manner.

Technically-trained people may be requested to supervise the activities of these youthful-rocket enthusiasts; but if we stop and think of the limited knowledge and experience these youngsters derive from rocket experiments, it doesn't seem to be worth the risk that is still involved.

For one thing, most of the formulations for rocket propellants that are prepared by amateurs have already been tried and tested long ago. There is only the remotest possibility that a young boy or girl can or will develop a modified propellant of any value. It is certainly not worth the danger involved in preparing the mixture, because of the reactive nature of the chemicals that must be used.

Homemade rockets are seldom anything but cardboard or metal tubes with very simple nozzle designs. Therefore, there is a good chance that the rocket will explode. The

structural design is likely to be inadequate, and the quality of the propellant inferior, the latter often being poorly prepared and improperly loaded into the rocket.

In view of these considerations pointing out the almost total lack of constructive experience to be gained from such experiments, it seems hardly necessary to ask the question: Are these experiments worth the risk of serious eye damage or loss of sight, severe burns, and possible loss of fingers and limbs?

Young people with a sincere interest in contributing to the science of rocketry should spend their time studying chemistry, physics, or other science subjects, and mathematics. Clubs can be organized to provide speakers, films, and discussions that cover recent developments in the field.

As they grow up, boys and girls with more active, disciplined minds can perhaps develop new propellants, motors, or nozzle designs from theoretical considerations. If the ideas or designs show promise, it will not be hard to obtain advice and assistance from trained people, either at a military installation, a research laboratory, or a university. If any testing is required, this type of institution can arrange for safe experiments. In most cases, the youthful inventor can be invited to participate.

There is no doubt that our country needs all of the scientists that we can develop. But, parents should encourage their scientifically-minded children to increase their knowledge by means of school studies, outside reading, and theoretical research. There is no excuse for taking risks in experimental areas where the hazards are so great.

Unfortunately, such accidents are not rare. The 2705th Airmunitions Wing, Ogden Air Materiel Area (AFLC) has received numerous reports from across the nation, concerning children who have been injured while playing, tampering or experimenting with chemicals and unexploded ordnance items. It is likely that the number not reported to them is even greater.

Public Law 1028 requires the military establishment to maintain an acceptable degree of safety from explosives to protect both the military and the public. Although this requirement at first brings to mind the obvious things, such as explosives disposal, ammo dumps, and the like, it should be remembered that the wide-spread interest in amateur rocketry can also be an explosives problem.

Reprinted from United States Air Force Aerospace Maintenance Safety magazine.

RANGE SAFETY AT RADFORD ARMY AMMUNITION PLANT

R. L. Asbury
Supervisor of the Ballistic Range
Hercules Powder Company
Radford Army Ammunition Plant

Rocket motors weighing from 1/4 to 3,000 pounds and producing up to 100,000 pounds thrust are fired for acceptance and quality assurance purposes at the static test range, Radford Army Ammunition Plant. Several hundred thousand rocket motors thus have been tested, over a period of 13 years, without a disabling injury -- a tribute to the Plant's comprehensive safety program.

Local safety requirements that made this outstanding safety record possible include:

1. Location and Layout. The static range is located in a remote area. Test bays are of reinforced concrete, earth covered, designed for motors that develop up to 100,000 pounds thrust and oriented so that exhaust from motors being fired is directed toward a sharply rising nearby hill. A 6-foot high chain-link fence surrounds the static test bays and provides for control of access by personnel. Gates leading into the area are interlocked with the firing circuits so that the firing circuit cannot be closed unless the gates are closed. Other facilities at the static test range are: a transfer building where loaded rockets are delivered for testing, a narrow-gauge railroad for transporting large rocket motors, conditioning facilities capable of temperatures from -80°F to +175°F, and an instrument house of reinforced concrete construction that is located below ground level. (See Photo #1).

2. Test Procedures, Personnel Training and Protective Clothing. Standing operating procedures are kept up to date and are posted at all work locations. All personnel are instructed in operations by the responsible supervisor. This is supplemented by on-the-job training and safety handbooks for the personal use of each operator. The handbooks describe the principal safety features of each job and, as proof of training, have provision for operator and supervisor signoff. All personnel wear conductive shoes, flame-proofed coveralls, safety glasses, and ear protection as required.

3. Handling and Temperature Conditioning of Rockets.

a. All rockets received at the transfer facility are inspected to insure that they have been accepted by Quality Control and to assure that damage has not been incurred in transit. A safety checklist documenting this information is then initiated and it follows the rocket motor through the remainder of its test cycle.

b. Large motors are secured to firing cars prior to conditioning. They remain on these cars for firing. (See Photo #2.)

c. All conditioning boxes contain at least 2 independent means of temperature measure to minimize the chance of incorrect temperature conditioning which might cause malfunction. In addition, hot boxes are fitted with secondary cut-off controls which will function if the primary control fails and the temperature exceeds a preset level. As a further safety precaution, all propellant in the conditioning boxes must be either in a closed metal container or in rocket motors. The conditioning building is barricaded and equipped with an automatic sprinkler-type fire protection system. Although personnel rarely are required to work inside sub-zero boxes, appropriate arctic clothing, respirators, and gloves, as outlined in AMCR 385-224, are available and required. The "buddy" system is used and even with the protective equipment, time in the box is restricted.

d. To minimize propulsion hazards in case of premature ignition during conditioning of large motors, use is made of thrust neutralizers, unarmed igniters where the quick-arming type is used, and frangible head closures in cases where the igniter screws directly into the rocket motor. Smaller motors which cannot be rendered nonpropulsive are conditioned and handled in a nozzle-up position, or make use of a special shearring which is replaced at the firing bay by a conventional snap ring. Where feasible for small motors which use threaded closures, one closure is engaged by a single thread which will shear in event of premature rocket ignition. No accidental or premature ignition has ever occurred.

4. Firing Bay Operations.

a. All rockets are tested in the horizontal position, either on firing cars as mentioned above, or on specially-designed thrust stands which allow longitudinal motion but restrict motion in other directions. Projecting ribs on

the firing car pass under anchor channels which are a permanent part of the firing bay floor. Since no portable hold-down devices are needed to secure the car to the bay, the possibility for failure of personnel to connect such devices during last-minute operations does not exist. Thrust adapters and assemblies and hold-down straps (see Photo #3) are checked by ultrasonic testing to assure their structural integrity.

b. Motors may not be connected for firing in adjacent bays at the same time and firing operations are limited to one bay at a time.

c. When firing circuits are being hooked-up, only those persons directly concerned are permitted in the firing area, and the crew is closely supervised. A safety observer whose sole purpose is to assure safe hookup, completes a safety checklist for each unit fired. The observer is the last man to leave the bay, and as he does, he installs a safety jumper which permits one of several relays in series with the firing circuits to close. The motor cannot be fired until all gates to the area are closed and the observer has proceeded to a fortified observation post where he closes another safety switch. The observer can view all of the firing area, and by means of the safety switch, he may delay firing for any reason that he finds necessary. The observer can communicate to the instrument operators through an intercom system and to other personnel in the general area of the range through a public address system. During firing, all personnel in the vicinity of the range are required to remain inside the instrument room or inside a fortified shelter located outside the firing closure.

d. Vehicular traffic to the vicinity of the firing bays is controlled by red lights when firings are impending. Appropriate red lights, a public address system, and warning horns are used for personnel control in the immediate firing bay area.

e. A safety panel in the instrument room has indicating lights to show when the various circuit interlocks are closed and when the safety jumpers are installed. When it is indicated that all other safety devices are closed, the instrument operator installs a safety jumper; firing is then handled through automatic sequencing equipment. (See Photo #4.)

f. Detailed misfire procedures are in effect in accordance with AMCR 385-224.

g. After firing is completed, operating personnel must remain outside the firing area for a prescribed time. Fans are used to clear the bays of ignition products and large motor cases are cooled by carbon dioxide or water prior to their removal from the firing bay.

5. Prevention of Premature Igniter Firing. Minimizing changes of ignition by static electricity or by radio frequency energy induction is important where electric squibs are employed. All igniter leads are shorted until immediately prior to firing and rocket motors are grounded whenever possible. Portable radio transmitters are not permitted to operate within the range area. Firing circuits are in separate conduits and no other current-carrying wires may be installed in such conduits because of the chance of stray pickup. Igniter circuit testers are designed for a minimum current output of 10 milliamperes on short circuit; testers are checked daily and whenever maintenance is performed.

Photo I LAYOUT OF BALLISTICS RANGE

PHOTO 2
Loading rocket on firing cart prior to being moved from transfer shed to conditioning house

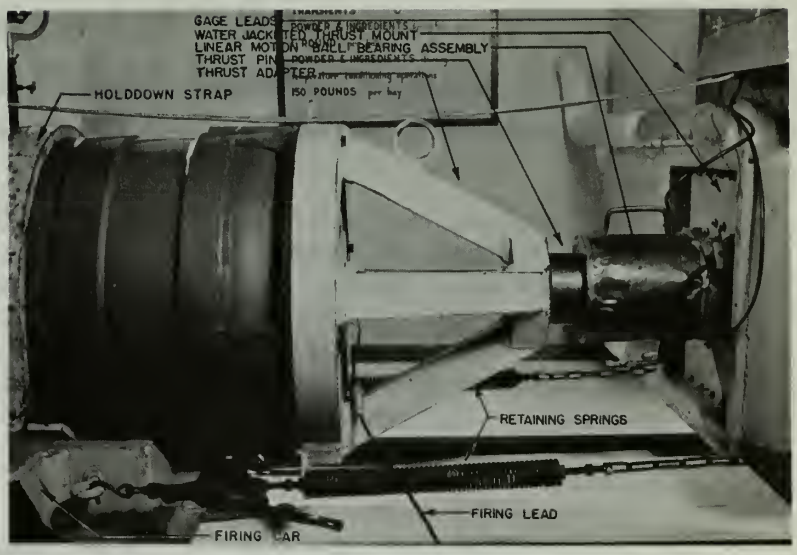


PHOTO 3
ROCKET READY FOR FIRING

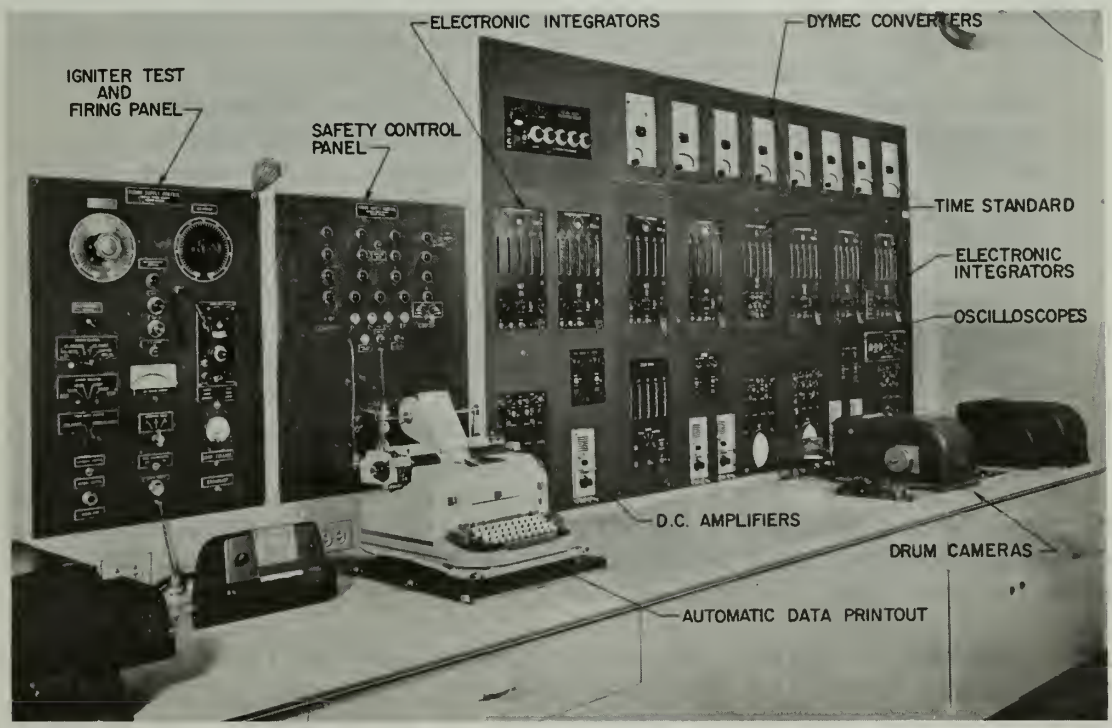


PHOTO-4 Instrument room showing one of two instrumentation tables

U.S. ARMY SUPPLY AND MAINTENANCE COMMAND HOLDS SECOND ANNUAL SAFETY DIRECTORS' CONFERENCE

The second U.S. Army Supply and Maintenance Command Safety Directors' Conference was held at Atlanta Army Depot, Forest Park, Georgia, on 21-23 September 1965.

Mr. H. C. Guest, Safety Director, Headquarters, U.S. Army Supply and Maintenance Command presided over the conference. Safety Directors and representatives from activities and/or offices throughout the U.S. Army Supply and Maintenance Command were in attendance.

The keynote address of the conference was presented by Brigadier General D. E. Breakefield, Director of Maintenance, U.S. Army Supply and Maintenance Command. General Breakefield stressed the importance of accident prevention in all our depots. He stated that the Commanding Officer, Safety Director and the Safety Program are the three keys to a successful accident prevention program. General Breakefield emphasized the need for each employee's participation if we are to achieve our safety goals. He stated, in part:

> "With the quick reaction type projects we have today, it is necessary that the Commander, safety personnel, and supervisor be cognizant of the need to orient new employees, to review new work areas, and to study differences that have come about in the past few months.
>
> "If the Commander, safety personnel, and supervisor know their safety records, know why accidents happen in their depots and take corrective action to eliminate the causes of accidents, I am sure we will show a great improvement in our overall program."

Mr. Fred Bishoff, Safety Director, U.S. Army Materiel Command, covered the assistance that AMC gives to SMC Headquarters and Installations.

Colonel R. Savailla, the Commanding Officer of Atlanta Army Depot, gave the welcome address. He stressed the importance of accident prevention in government installations. Mission Safety-70 indicates that 1,200 federal workers died from work injury accidents and that nearly 300,000 sustained disabling work injuries over a seven-year period. He

concluded his address by saying: "I know that there isn't a more dedicated group of people than you are. Together we must strive for the same goal, and that is a drastic reduction of our accident rates."

Colonel G. P. Levy, Commanding Officer, Anniston Army Depot, addressed the conference on "Safety and the Commanding Officer." His remarks included the following points:

> "The Commander must furnish the guidance and let supervisors know how he feels on safety. Accident prevention is very important to me and my people. We have recently established a program to include all employees in an active role in our safety program. I am sure we have made progress, but our goal of no accidents has not been reached. Through active participation of all personnel on Anniston Army Depot we hope to reach it. The Commander is the key figure. If he shows interest in his program, all employees will show the same interest."

Colonel C. H. Johnston, the Inspector General, U.S. Army Supply and Maintenance Command addressed the group on the purpose of their inspections as follows:

> "The IG wants you to present problems to their team that you have been unable to solve at local level. He is there to help in every way possible to strengthen your program. The coordination between the AGI teams and the SMC Safety Offcce is very fine and we are accomplishing our intended goals. Each director here today is dedicated to his work and as a team, we can reduce our accident potential."

The three-day conference stressed the importance of accident prevention in all SMC Depots. The President's program "Mission Safety-70" was presented as a challenge to reduce accidents within the U.S. Army Supply and Maintenance Command by the required 30 percent.

SAFE MACHINES FOR ACCIDENT FREE OPERATION

Lyman E. Pevey
Safety Director, Springfield Armory

Several years ago at Springfield Armory, it was the usual practice to install, or move machinery to different shop locations without consulting the Safety Office. There was no assurance that safety precautions were being observed.

In recent years, the following procedures were instituted to assure that all movement, installation, and operation of machinery were accomplished with the maximum safety possible.

The Armory's Production Equipment Unit is responsible for having an "Acceptance Equipment Tag" affixed to each machine about to be or newly moved into a shop area. This tag indicates that the machine is not to be released for use until it has been inspected and approved by personnel from the Electrical Shop, the Machine Service Center, and the Safety Office, in that order. The shop foreman is responsible for assuring that no newly installed machine is operated until it has been released by the Safety Office.

The following specific procedures are followed in implementing the policy:

- Electrical Shop

1. The Electrical Shop insures that all electrical equipment and connections are in accordance with the National Electrical Code and the National Electrical Safety Code.

2. Upon completion of electrical power connection, an authorized representative of the Electrical Shop inspects the machine.

a. If the electrical installation is satisfactory, the inspector signs and dates an "Equipment Acceptance Tag."

b. If the installation is unsatisfactory, he causes action to be taken to insure proper installation of the machine. A "DO NOT SIGN" tag is applied until the electrical installation is in accordance with the codes.

- Machine Service Center

1. The Machine Service Center insures that the design limitations of the machine are not exceeded, and that all machine guards are replaced upon completion of adjustments and repairs.

2. Upon completion of adjustments and repairs, an authorized representative of the Machine Service Center inspects the machine.

a. If the machine installation is satisfactory, he signs and dates an "Equipment Acceptance Tag."

b. If the machine installation is unsatisfactory, he causes action to be taken to insure proper installation. A "DO NOT SIGN" tag is applied until the installation is satisfactory.

- Safety Office

1. Upon notification that the machine is ready for inspection the Safety Inspector observes the operation of the newly installed machine to determine if the safety features of the machine are operative and whether additional safety equipment or devices are required.

2. Upon completion of his inspection, the Safety Inspector does the following:

a. If the machine is satisfactory, he notifies the foreman of the department that the machine is released for use. He signs, dates, and removes the "Equipment Acceptance Tag" and returns it to the Safety Office for file.

b. If the machine is unsatisfactory, the Safety Inspector causes action to be taken to assure that corrective action is accomplished. The "Equipment Acceptance Tag" is not signed or removed until the machine is satisfactory.

Since the implementation of these procedures, personnel responsible for installation have become more cognizant of applicable codes. Assistance is provided by technically qualified personnel from movement through operation of the machines. As a result, Springfield Armory is assured that necessary safeguards are present when machines are put into use.

OFF-POST SAFETY

● Plant Employee Electrocuted

"John P. Doe, 40, and his son Edwin, 18, were found dead on the ground outside their home at 4:30 pm Saturday. They had been attempting to erect a 50-foot pole on the house. Investigators believe the pole fell out of balance and struck a 7,200-volt power line, bringing death to Doe and his son."

● Plant Foreman Hospitalized by Auto Accident

"Richard E. Roe, carpenter foreman at the Blank Army Plant, was critally injured when he lost control of his car on a Dixie Highway curve late yesterday afternoon."

Stories such as these summaries of typical off-post accidents appear frequently in plant newspapers and in papers published near AMC installations. Unless active Army personnel or Army property are involved, these accidents are not reflected in the AMC frequency rates and per capita data. Even though the official record may remain clear, the Army may often be the loser.

If the indivudual or a member of his family is killed or injured off-post, or even sustains significant property damage in an accident, the Army is influenced adversely.

-- If he is killed, all benefits that his installation might expect from his training, experience, and acquired skills are lost. Expense, time, and work will be required to select and train his successor.

-- If he is severely injured, his organization loses his services until he can return to work. There is the expense of sick leave. A substitute must do his work while he is away. The work may be accomplished less efficiently, with a greater likelihood of error.

-- If his injuries are minor, he may still be a less efficient worker until his recovery is complete.

-- If a member of his family is killed or seriously injured, he finds it necessary to take leave. If he is not away from work, the worries associated with his family crisis detract from his effectiveness as a worker.

-- If the damage is only a property loss, it may still require the individual to take leave. Even when he is on the job, his added financial problems may cause a loss in efficiency.

The average employee is on the job for only 40 of the 168 hours that make up a seven-day week. Off-post accidents prevented mean personal suffering and loss avoided. It also means increased efficiency and savings to the Army. Obviously, an off-post safety program as part of the installation accident prevention effort will be of benefit to all concerned.

DO YOU KNOW WHAT TO DO IN AN EMERGENCY?

A BLOW-OUT?
LET YOUR CAR COAST TO A STOP.
DON'T BRAKE HARD.
BRAKES FAIL?
USE HAND BRAKE.
STEER INTO CURB IF NECESSARY.
OFF SHOULDER?
HOLD STEERING WHEEL FIRMLY.
LET CAR SLOW DOWN.
THEN TURN WHEELS BACK ON ROAD.
A SKID?
IF YOUR CAR GOES INTO SKID, TURN WHEELS IN DIRECTION OF SKID. DON'T SET BRAKES.
CAUGHT BY LIGHT CHANGE?
IN INTERSECTION -- CONTINUE AT SAFE SPEED.
APPROACHING INTERSECTION -- STOP WHEN YOU CAN DO SO SAFELY.
... BUT DON'T SLAM ON BRAKES.

DON'T CAUSE OR BECOME A STATISTIC.!

SHARPE ARMY DEPOT

DO YOU KNOW?

The following questions on safety will test your ready knowledge of ten subjects covered by AMCR 385-224. How many can you answer? Try them before turning to the answers on pages 41 and 42.

1. Is the foreman who checks his men's protective clothing twice every month properly discharging his safety responsibility?

   Answer and reference:

2. Should an installation adopt its chemist's proposal to use an aqueous solution of ceric ammonium nitrate to destroy small quantities of lead azide?

   Answer and reference:

3. How close may primary and secondary overhead electric transmission lines in an explosives area be located to a building that contains explosives?

   Answer and reference:

4. What is the minimum separation between a privately-owned railroad that does not carry passengers and a magazine that contains explosives?

   Answer and reference:

5. Is it acceptable to use wrought iron chain for slings, hoists, and cranes at AMC installations?

   Answer and reference:

6. What safety precautions must be taken before a workman on a scaffold is permitted to crawl out on a projecting beam?

7. How often should an employee who works in a TNT manufacturing area be required to take a shower bath at the installation?

   Answer and reference:

8. May women be employed at any "toxic" operations that are safe for men?

   Answer and reference:

9. Is there a requirement that firebreaks be maintained around all earth-covered magazines?

   Answer and reference:

10. May earth-covered magazines be used for the storage of all items of ammunition or explosives?

    Answer and reference:

THE BIG VOICE

The Big Voice, a recently installed outside and inside public address system strategically located throughout Redstone Arsenal, Alabama, was designed primarily for civil defense alerts and other emergency alarms; however, it has already been used effectively to promote such special safety campaigns as Mission Safety-70 and the installation's Courteous Driver's Campaign.

Safety personnel at Redstone never miss an opportunity to instill safety awareness to all employees in about every known media. Other additional special safety campaigns covering holiday accident prevention plans are currently being worked up for "The Big Voice."

- U.S. Army Missile Support Command

HOME SHOP SAFETY

Glenn S. Leach, Safety Assistant Trainee
U.S. Army Materiel Command Field Safety Agency

Working in home shops is a favorite form of relaxation and recreation for many of us. Many useful and attractive items for our homes are made there. Unfortunately, home shops are frequently a source of accidents, some quite serious.

Would your home shop pass a simple safety check? It should. The following safety hints can give your shop those professional touches that will add to the pleasure of its use and increase your safety. The four rules given below form the basis of hand-tool safety, whether at home or on the job.

1. Select the right tool for the job.

2. Use tools in the right way.

3. Keep tools in good condition.

4. Keep tools in a safe place.

Using the proper tool gives you the balance and feel that often makes the difference between work that is "just so," and work that is "almost right." Using tools correctly gives an added measure of pleasure to your work. The work goes faster, smoother, and more safely.

The proper use of tools includes using the right auxiliary equipment. Do you have a grinder for sharpening chisels or squaring the ends of your screwdrivers? If so, then here is a need for eye protection. Safety glasses may prove to be more than worth their weight in gold if the wheel suddenly disintegrated or if the tool chipped.

It is easy to see how keeping tools in good condition is an aid to both safety and good work. Use of a dull chisel will make the job harder to do, and may mar the material. Screwdrivers with ends that are rounded instead of square do not seat properly and will tend to widen the slot in the screwhead. Pointed tools must be kept sharp for proper and safe utilization.

Often it is our most familiar and most frequently used tools that receive the least attention. Three tools common to almost every home shop are hammers, saws, and files. Take a look at yours.

How are the faces on your claw and ball peen hammers? Are they chipped? Using a hammer with a chipped and flawed head is dangerous. Keep them in good shape.

A good rule for the use of hammers is never to use the hammer on a surface that is likely to chip or shatter when hit by that hammer. Use the right hammer for the job. Rubber and wood mallets and metal and rawhide hammers have their particular uses. Use them wisely and properly and you are that much ahead of the game.

How about the handles on your hammers? Are the wedges tight? Use of a nail to keep the head on is an invitation for trouble. If the handle is cracked or badly scarred you need a new one. It is easier to use a hammer if you can get a good grip on it.

All saws are variations of two basic types -- rip and crosscut. One won't cut efficiently when used for the other. Crosscut saws have the teeth displaced side to side, rip saws have the teeth in line. The difference sharpening can make may amaze you. While using the wrong saw or a dull one may only result in slow work and splintering along the cut when sawing by hand, it may prove harmful if a power saw is used.

Files are sturdy, useful tools that do not require much attention, but there are a couple of points to keep in mind. Clogged files do not cut well. Use a file brush. Use handles on the tang of your files to avoid puncture wounds.

Most homes have at least a portable electric drill. This item, as well as other electrically powered home equipment, can be deadly. Portable electric tools are often used outdoors or in other locations where there is a danger of accidental grounding through yourself. Therefore, grounding is necessary to prevent shock or possible fatal injuries. If your home doesn't have a three-wire system, grounding can be accomplished by attaching one end of a wire to the case of the tool, taping the ground wire along the cord, and fastening the other end to a battery clamp attached to a convenient ground. Check the condition of the cords often, particularly at the points where they enter the tool and at the plugs. Shorts develop at these points most frequently.

In addition to maintaining the tools in good condition, safe storage will prevent accidental injuries to yourself and others. Good storage keeps tools handy too. Hang your saws by the handles; the cutting edge will be protected and will remain sharp longer. Planes should be stored on their sides or with a block of wood under them.

Home shop safety principally is a matter of understanding coupled with common sense. The right tool, used in the right way, does the best job.

REFERENCE PUBLICATIONS

AR 95-18, 28 October 1965
Aviation - Grounding of Army Aircraft

AR 385-40, Change 3, 17 September 1965
Safety - Accident Reporting and Records

AR 385-55, 2 September 1965
Safety - Prevention of Motor Vehicle Accidents

AMCR 385-17, 29 September 1965
Safety - Hazardous Items Contracts
(This regulation supersedes paragraph 11, AMCR 385-1 1 August 1962)

DA Circular 40-21, 4 November 1965
Medical Service - Environmental Pollution Abatement

DA Circular 420-15, 15 October 1965
Repairs and Utilities - Water Heater Hazards
(Cites the danger of explosion, under runaway heating conditions, of domestic-type electric water heater equipped with internal plastic heat traps. Preventive action is prescribed.)

WELL... DID YOU KNOW?

Answers are given below for the industrial safety questions that appear on pages 36 and 37. If you answered all of them correctly, you may mark you answer sheet "excellent." All questions were based on information contained in AMCR 385-224. A reference to the pertinent paragraph follows each answer.

1. No. He should inspect protective clothing and equipment at least weekly to make certain it is in serviceable condition. Reference: Paragraph 1005a.

2. The AMC Safety Manual lists four acceptable chemical methods for destroying small quantities of lead azide. The use of a 20-25 per cent aqueous solution of ceric ammonimum nitrate is the preferred method. Reference: Paragraph 302d.

3. Primary and secondary overhead transmission lines in an explosives area shall not be located closer to a building containing explosives than the height of the pole carrying the lines, but in no case closer than 50 feet. Reference Paragraph 610.

4. The minimum separation distance is 400 feet, unless the public railway distance specified in an appropriate quantity-distance table is less. Reference: Paragraph 1703b.

5. Wrought iron or "crane chain" is the acceptable type of chain used for slings, hoists, cranes, steam shovels, and machine purposes. Reference: Paragraph 907.

6. A life line and safety harness belts of an approved design shall be worn and anchored properly before an employee on a scaffold is permitted to crawl out on a projecting beam. Reference: Paragraph 918c.

7. A worker who has been determined to have significant exposure to toxic chemicals such as TNT should not be permitted to leave the establishment after work until he has taken a thorough shower bath and made a complete change to uncontaminated clothing. Reference: Paragraph 1103c.

8. Yes. When women are employed, however, the jobs should be engineered to prevent undue postural strains or excessive weight lifting. Reference: Paragraph 1104.

9. The maintenance of firebreaks around earth-covered magazines is not normally required. Reference: Paragraph 1216b.

10. Yes. Reference: Paragraph 1802.

NEEDED SIGNS CAN PREVENT INJURY

The two photographs on this page show the value of posted and heeded signs in preventing injuries. An Army Materiel Command installation was performing an explosives operation in the building. Three walls of each room were made of 12-inch reinforced concrete. The weak fourth wall was made of wood framing and Cello-Glass. Personnel were warned to stay away from the area of greater exposure by a sign that read: "DANGER - DO NOT PASS IN REAR WHEN BUILDING IS IN OPERATION." The exposed area was clear of personnel when an explosion did occur and no one was injured. Photo 1 shows the sign and a general view of the weak wall after the explosion. Photo 2 shows a close-up view of the room in which the accident happened.

PHOTO 1

PHOTO 2

SAFETY NOTES

SAFETY NOTES

WORK SAFELY- "REDUCE FEDERAL EMPLOYEE WORK INJURIES 30% BY 1970"

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